

**INTERACTIVE SYSTEM FOR  
DESIGN, CUSTOMIZATION AND MANUFACTURE OF  
DECORATIVE TEXTILE SUBSTRATES**

**ABSTRACT OF THE DISCLOSURE**

10 A system and method for enabling customer specification of images to be used for  
decorating textile substrates at the economies of mass customization. An automated  
patterning apparatus is implemented that comprises a plurality of individual colorant  
substances that are directed through a set of colorant applicators in accordance with  
predetermined pattern data, the colorant substances capable of being selectively applied  
15 to individual pixels on the substrate in accordance with the predetermined pattern data.  
The system and method particularly implements a device providing an interface for  
enabling remote access to an image manipulation design tool that enables user  
customization of the digitized image to form a target image over a communications  
network. A digitized image of the user's choice is imported into the image manipulation  
20 design tool and that image is manipulated according the user's artistic vision. A  
dithering algorithm may be implemented for generating a dithered image from the  
digitized target image using a dithering palette of colors that are able to be generated at  
specified pixel locations on the textile substrate using the plurality of individual  
colorants. Finally, an order is generated and electronically communicated to the  
25 automated patterning apparatus for initiating transformation of the dithered image into a  
dyed pattern on the textile substrate. Through the use of the automated patterning  
apparatus, appropriate firing instructions are generated for each of the color applicators  
necessary to reproduce the dithered image on the substrate.